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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,925	10/01/2003	Moh-Ching O. Chang	PO-7942/MD-03-27	8474

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Lanxess Corporation  
Law & Intellectual Property Department  
111 RIDC Park West Drive  
Pittsburgh, PA 15275-1112

EXAMINER
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MULLIS, JEFFREY C

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/676,925

Applicant(s)

CHANG ET AL.

Examiner

Jeffrey C. Mullis

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 9-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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Claims 9-12, 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The amount of methylmethacrylate (mma) embraced by the instant claims is unclear in that component "A.1" recites methylmethacrylate as a component without limitation as to quantity while "A.2" recites methylmethacrylate as present in the copolymer at a specific level and therefore those skilled in the art when viewing a copolymer containing methylmethacrylate would not know whether or not the amount of methylmethacrylate was within the metes and bounds of the claims in that the amount of mma is unlimited when viewed as A.1 but limited when viewed as A.2.

It is noted that the identical rejection was made in the first Office action. Applicants sole response was to delete mma as component A.1 in claim 1. However such an amendment has no effect on claims not dependent on claim 1.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, 7 and 9 –16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanes (U.S. 6,040,382) in view of Roach (U.S. 5,879,596) or Wozny (US006040370A) or Campbell et al. (US005973074A) or Padwa (US005905118A) .

Hanes discloses a polymer blend containing three polymeric materials which are said to be "transparent" (note the Abstract in this regard) and which contains a styrene-maleic anhydride copolymer. Note Example 1 in column 10 where the styrene maleic anhydride copolymer is a copolymer having 86% styrene and 14% maleic anhydride or one in which 11% maleic anhydride was present. Note that the first copolymer A is said to be a styrene-butadiene copolymer made from multiple initiator and monomer charges at column 10 lines 21-30, a known method for making block copolymers. Note also column 5 lines 29-35 where it is disclosed that component A is a block copolymer. Note the last complete sentence in column 6 of Hanes where it is disclosed that the styrene-maleic anhydride copolymer has a degree of polymerization of 150 to about 400, i.e. number average molecular weight may be a bit higher than 40,000. With regard to the maleic anhydride content of the styrene/maleic anhydride copolymer, note column 7 lines 15-20 where it is disclosed that the preferred range of styrene is 80-90% in such copolymers i.e. 10 to 20% although as much as 30% may be present, within the metes and bounds of the instant claims. Note column 7 lines 4-14 where it is disclosed that the styrene maleic anhydride copolymer may also contain acrylonitrile or methyl methacrylate in "a minor amount", i.e. less than 50%.

There are no specific examples in Hanes in which all of applicants' specified parameters such as weight average molecular weight and maleic anhydride content as

well as acrylonitrile are present. However choice of such based on the disclosure of the primary reference (with the exception of choice of applicants' weight average molecular weight) would have been obvious to a practitioner based entirely on the disclosure of the primary reference given that the instant claims are within the broad ambit of Hanes and in the expectation of adequate results absent any showing of surprising or unexpected results. With regard to applicants' weight average molecular weights, note Roach at column 5 lines 18-32 where it is disclosed that molecular weight distribution is an important variable with regard to the beneficial characteristics of macromolecular compositions such as processability and that broad molecular weight distribution in fact is beneficial with regard to processability. Therefore to arrive at applicants' weight average molecular weights based on the disclosure of the number average molecular weights in Hanes and the disclosure of Roach that weight average molecular weight over number average molecular weight is an important result effective variable with regard to processability, it would have been obvious to a practitioner having ordinary skill in the art at the time of the invention arrive at a polydispersity of 2-6 (such as would result in weight average molecular weights of Hanes' materials within the metes and bounds of the claims) in that it requires only routine experimentation to find the optimum or workable range of a result effective variable absent any showing of surprising or unexpected results. Furthermore, note the disclosure of Wozny et al. at column 17, lines 64-67, Campbell at column 8, lines 26-30 and Padwa at column 3, lines 57-62 who all disclose styrene acrylonitrile of applicants' weight and number average molecular weights suitable for use in thermoplastic molding compositions and

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as the primary reference also desire to use styrene acrylonitrile in thermoplastic molding compositions, it would have been obvious to a practitioner having ordinary skill in the art at the time of the invention to use the number and weight average molecular weights of the styrene acrylonitrile resins of the secondary references in the primary reference, motivated to practice the invention of the primary reference and by the disclosure of the secondary references of materials that can be used to produce a workable molding composition, absent any showing of surprising or unexpected results.

Claims 1-7, 9 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaoka et al. (U.S. 5,180,535) in view of Roach and Hanes (with Hanes relied upon for claim 10), both cited above and Wozny (US006040370A) or Campbell et al. (US005973074A) or Padwa (US005905118A) .

Yamaoka et al. disclose a composition containing styrene-conjugated diene block copolymers at a level of 50-90 weight percent including SBS (note the Abstract and claim 3 of the patent) and also having 50% by weight or less of a styrene resin other than the block copolymer including styrene copolymers with maleic anhydride or acrylonitrile or methacrylates (note the Abstract as well as claim 5 of the patent in this regard). Note applicants' number average molecular weight range is embraced by that of patentees at the sentence bridging columns 4 and 5 with the molecular weight recited could be adapted for injection molding. Note that the Examples of patentees contain materials such as styrene-methyl methacrylate embraced by applicants' "copolymer" in

line 2 of the independent claims and containing applicants' non-styrene monomer in applicants' amounts.

There are no specific examples in which both of applicants' components in combination within all the parameters of applicants' claims although the Examples of Yamaoka are very similar to that of applicants. Furthermore Yamaoka et al. do not disclose that their composition is transparent and are silent on this limitation of applicants.

With regard to applicants' number average molecular weight limitations and monomer concentrations, choice of such from the primary reference would have been obvious to a practitioner having ordinary skill in the art at the time of the invention in the expectation of adequate results absent any showing of surprising or unexpected results.

With regard to applicants' weight average molecular weight limitation, Roach discloses that weight average molecular weights should be manipulated relative to number average molecular weight for optimum processability and as the primary reference specifically requires injection molding (a type of processing) and also discloses that molecular weights may be manipulated for optimum injection molding, it would have been obvious to a practitioner having ordinary skill in the art at the time of the invention to find the optimum or workable range of weight average molecular weight since Roach discloses that this is a result effective variable for processing absent any showing of surprising or unexpected results. Furthermore, note the disclosure of Wozny et al. at column 17, lines 64-67, Campbell at column 8, lines 26-30 and Padwa at column 3, lines 57-62 who all disclose styrene acrylonitrile of applicants' weight and

number average molecular weights suitable for use in thermoplastic molding compositions and as the primary reference also desire to use styrene acrylonitrile in thermoplastic molding compositions, it would have been obvious to a practitioner having ordinary skill in the art at the time of the invention to use the number and weight average molecular weights of the styrene acrylonitrile resins of the secondary references in the primary reference, motivated to practice the invention of the primary reference and by the disclosure of the secondary references of materials that can be used to produce a workable molding composition, absent any showing of surprising or unexpected results.

With regard to claim 10, Hanes specifically discloses that transparency is a desirable quality at column 1 lines 20-25 and discloses methods for conferring transparency and therefore it would have been obvious to a practitioner having ordinary skill in the art at the time of the invention to confer transparency on Yamaoka's composition since this is disclosed by the secondary reference to be beneficial absent any showing of surprising or unexpected results.

Applicant's arguments filed 3-28-06 have been fully considered but they are not persuasive.

Roach discloses that polydispersity is a result effective variable with re to process ability and means of adjusting molecular weights of macromolecules are known in the art. Hence Roach provides an enabling suggestion to find polydispersities which



would result in applicants weight average molecular weights when using the materials of the primary references having applicants number average molecular weights.

The term "consisting essentially of" only excludes those materials which materially affect the novel and basic characteristics of a composition and it is applicants' burden to prove that such characteristics are changed by the presence of additional materials recited in a prior art product. Note In re Janakirama-Rao, 317 F. 2d 951, 137 USPQ 893 (CCPA 1963) and In re De Lajarte, 337 F. 2d 870, 143 USPQ 256 (CCPA 1964) in this regard.

Roach cites the ENCYCLOPEDIA OF POLYMER SCIENCE AND ENGINEERING for his authority re molecular weights, the sort of general information that all practitioners should be aware and therefore cannot be said to be non analogous art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Mullis whose telephone number is (571) 272-1075. The examiner can normally be reached on Monday-Friday from 9:30 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck, can be reached on (571) 272-1078. The fax phone number for this Group is (703) 872-9306.

JCM

4-21-06



Jeffrey Mullis  
Primary Examiner  
Art Unit 1711

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Primary Examiner  
Art Unit 1711